12. (Amended) The assay of claim 1, wherein said biochemical target of said predecessor is a viral protease, a viral reverse transcriptase, a viral polymerase, a viral enzyme, or a viral protein.

13. (Amended) The assay of claim 1, wherein said biochemical target of said malarial parasite is a plasmepsin, a plasmodial enzyme, or a protein.

aa1

14. (Amended) The assay of claim 1, wherein said biochemical target of said predecessor is an oligomer and said compound inhibits the oligomerization of said oligomer of said predecessor.

15. (Amended) The assay of claim 1, wherein said biochemical target of said predecessor is a protein and said compound inhibits a conformational change, ligand binding, or enzyme activity in said protein of said predecessor.

aa2

18. (Amended) The assay of claim 16, wherein K_{inh} is K_i.

19. (Amended) The assay of claim 16, wherein K_{inh} is K_d.

aa3

24. (Amended) The method of claim 23, wherein said retrovirus is HIV-1 or HIV-2.

aa4

28. (Amended) The method of claim 20, wherein said disease-causing replicating biological entity is a cancer cell.

30. (Amended) The method claim 20, wherein said biochemical target of said disease-causing replicating biological entity is an enzyme and said compound inhibits said enzyme of said disease-causing replicating biological entity.

31. (Amended) The method of claim 22, wherein said biochemical target of said disease-causing replicating biological entity is a viral protease, a viral reverse transcriptase, a viral polymerase, a viral enzyme, or a viral protein.

aa5

32. (Amended) The method of claim 25, wherein said biochemical target of said malarial parasite is a plasmepsin, a plasmodial enzyme, or a protein.

33. (Amended) The method of claim 20, wherein said biochemical target of said disease-causing replicating biological entity is an oligomer and said compound inhibits the oligomerization of said oligomer of said disease-causing replicating biological entity.

34. (Amended) The method of claim 20, wherein said biochemical target of said disease-causing replicating biological entity is a protein and said compound inhibits a conformational change, ligand binding, or enzyme activity in said protein of said disease-causing replicating biological entity.

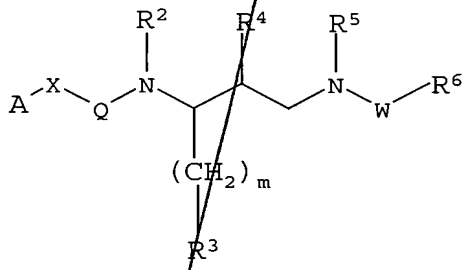
37. (Amended) The method of claim 35, wherein K_{inh} is K_i.

aa6

aa6 38. (Amended) The method of claim 35, wherein K_{inh} is K_d.

43. (Amended) The method of claim 39, wherein said mutant has at least one aa7 active site mutation.

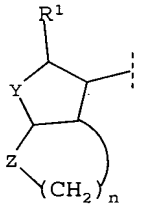
47. (Amended) A method of preventing the development of drug resistance in an HIV-infected mammal, said method comprising administering to said HIV-infected mammal a drug resistance-inhibiting effective amount of a compound of the formula:



(I),

or a pharmaceutically acceptable salt, a prodrug, or an ester thereof, or a pharmaceutically acceptable composition of said compound, said salt, said prodrug, or said ester thereof, wherein:

aa8 A is a group of the formula:



R^1 is H or an alkyl, an alkenyl, an alkynyl, a cycloalkyl, a cycloalkylalkyl, an aryl, an aralkyl, a heterocycloalkyl, a heterocycloalkylalkyl, a heteroaryl, or a heteroaralkyl, in which at least one hydrogen atom is optionally substituted with a substituent selected

from the group consisting of OR^7, SR^7, CN, NO_2, N_3, and a halogen, wherein R^7 is H, an unsubstituted alkyl, an unsubstituted alkenyl, or an unsubstituted alkynyl;

Y and Z are the same or different and each is selected from the group consisting of CH_2, O, S, SO, SO_2, NR^8, $R^8C(O)N$, $R^8C(S)N$, $R^8OC(O)N$, $R^8OC(S)N$, $R^8SC(O)N$, $R^8R^9NC(O)N$, and $R^8R^9NC(S)N$, wherein R^8 and R^9 are each selected from the group consisting of H, an unsubstituted alkyl, an unsubstituted alkenyl, and an unsubstituted alkynyl;

n is an integer from 1 to 5;

X is a covalent bond, CHR^{10}, $CHR^{10}CH_2$, CH_2CHR^{10}, O, NR^{10}, or S, wherein R^{10} is H, an unsubstituted alkyl, an unsubstituted alkenyl, or an unsubstituted alkynyl;

Q is C(O), C(S), or SO_2;

R^2 is H, a C_1-C_6 alkyl, a C_2-C_6 alkenyl, or a C_2-C_6 alkynyl;

m is an integer from 0 to 6;

R^3 is a cycloalkyl, a heterocycloalkyl, an aryl, or a heteroaryl in which at least one hydrogen atom is optionally substituted with a substituent selected from the group consisting of alkyl, $(CH_2)_pR^{11}$, OR^{12}, SR^{12}, CN, N_3, NO_2, $NR^{12}R^{13}$, $C(O)R^{12}$, $C(S)R^{12}$, CO_2R^{12}, $C(O)SR^{12}$, $C(O)NR^{12}R^{13}$, $C(S)NR^{12}R^{13}$, $NR^{12}C(O)R^{13}$, $NR^{12}C(S)R^{13}$, $NR^{12}CO_2R^{13}$, $NR^{12}C(O)SR^{13}$, and a halogen, wherein:

p is an integer from 0 to 5;

R^{11} is a cycloalkyl, a heterocycloalkyl, an aryl, or a heteroaryl in which at least one hydrogen atom is optionally substituted with a substituent selected from the group consisting of a halogen, OH, OCH_3, NH_2, NO_2, SH, and CN; and

R^{12} and R^{13} are the same or different and each is selected from the group consisting of H, an unsubstituted alkyl, an unsubstituted alkenyl, and an unsubstituted alkynyl;

R^4 is OH, =O (keto) or NH_2, wherein, when R^4 is OH, it is optionally in the form of a pharmaceutically acceptable ester or prodrug, and when R^4 is NH_2, it is optionally an amide, a hydroxylamino, a carbamate, a urea, an alkylamino, a dialkylamino, a protic salt thereof, or a tetraalkylammonium salt thereof;

R^5 is H, a C_1-C_6 alkyl radical, a C_2-C_6 alkenyl radical, or $(CH_2)_qR^{14}$, wherein q is an integer form 0 to 5, and R^{14} is a cycloalkyl, a heterocycloalkyl, an aryl, or a heteroaryl radical in which at least one hydrogen atom is optionally substituted with a substituent selected from the group consisting of a halogen, OH, OCH_3, NH_2, NO_2, SH, and CN;

W is C(O), C(S), or SO_2; and

R^6 is a cycloalkyl, heterocycloalkyl, aryl, or heteroaryl radical in which at least one hydrogen atom is optionally substituted with a substituent selected from the group consisting of a halogen, OR^{15}, SR^{15}, $S(O)R^{15}$, SO_2R^{15}, $SO_2NR^{15}R^{16}$, $SO_2N(OH)R^{15}$, CN, CR^{15}=NR^{16}, CR^{15}=$N(OR^{16})$, N_3, NO_2, $NR^{15}R^{16}$, $N(OH)R^{15}$, $C(O)R^{15}$, $C(S)R^{15}$, CO_2R^{15}, $C(O)SR^{15}$, $C(O)NR^{15}R^{16}$, $C(S)NR^{15}R^{16}$, $C(O)N(OH)R^{15}$, $C(S)N(OH)R^{15}$, $NR^{15}C(O)R^{16}$, $NR^{15}C(S)R^{16}$, $N(OH)C(O)R^{15}$, $N(OH)C(S)R^{15}$, $NR^{15}CO_2R^{16}$, $N(OH)CO_2R^{15}$, $NR^{15}C(O)SR^{16}$, $NR^{15}C(O)NR^{16}R^{17}$, $NR^{15}C(S)NR^{16}R^{17}$, $N(OH)C(O)NR^{15}R^{16}$, $N(OH)C(S)NR^{15}R^{16}$, $NR^{15}C(O)N(OH)R^{16}$, $NR^{15}C(S)N(OH)R^{16}$, $NR^{15}SO_2R^{16}$, $NHSO_2NR^{15}R^{16}$, $NR^{15}SO_2NHR^{16}$, $P(O)(OR^{15})(OR^{16})$, an alkyl, an alkoxy, an alkylthio, an alkylamino, a cycloalkyl, a cycloalkylalkyl, a heterocycloalkyl, a heterocycloalkylalkyl, an aryl, an aryloxy, an arylamino, an arylthio, an aralkyl, an aryloxyalkyl, an arylaminoalkyl, an aralkoxy, an (aryloxy)alkoxy, an (arylamino)alkoxy, an

(arylthio)alkoxy, an aralkylamino, an (aryloxy)alkylamino, an (arylamino)alkylamino, an (arylthio)alkylamino, an aralkylthio, an (aryloxy)alkylthio, an (arylamino)alkylthio, an (arylthio)alkylthio, a heteroaryl, a heteroaryloxy, a heteroarylamino, a heteroarylthio, a heteroaralkyl, a heteroaralkoxy, a heteroaralkylamino, and a heteroaralkylthio,

wherein R^{15}, R^{16}, and R^{17} are the same or different and each is H, an unsubstituted alkyl, or an unsubstituted alkenyl,

aa8

wherein, when at least one hydrogen atom of R^6 is substituted with a substituent other than a halogen, OR^{15}, SR^{15}, CN, N_3, NO_2, $NR^{15}R^{16}$, $C(O)R^{15}$, $C(S)R^{15}$, CO_2R^{15}, $C(O)SR^{15}$, $C(O)NR^{15}R^{16}$, $C(S)NR^{15}R^{16}$, $NR^{15}C(O)R^{16}$, $NR^{15}C(S)R^{16}$, $NR^{15}CO_2R^{16}$, $NR^{15}C(O)SR^{16}$, $NR^{15}C(O)NR^{16}R^{17}$, or $NR^{15}C(S)NR^{16}R^{17}$, at least one hydrogen atom on said substituent is optionally substituted with a halogen, OR^{15}, SR^{15}, CN, N_3, NO_2, $NR^{15}R^{16}$, $C(O)R^{15}$, $C(S)R^{15}$, CO_2R^{15}, $C(O)SR^{15}$, $C(O)NR^{15}R^{16}$, $C(S)NR^{15}R^{16}$, $NR^{15}C(O)R^{15}$, $NR^{15}C(S)R^{16}$, $NR^{15}CO_2R^{16}$, $NR^{15}C(O)SR^{16}$, $NR^{15}C(O)NR^{16}R^{17}$, or $NR^{15}C(S)NR^{16}R^{17}$; and

wherein a mutant virus that is capable of evolving from the HIV virus infecting said mammal has lower fitness, relative to said HIV virus infecting said mammal, in the presence of said compound.

49. (Amended) The method of claim 47, wherein:

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when R^1 is an alkyl, it is a C_1-C_6 alkyl;

when R^1 is an alkenyl it is a C_2-C_6 alkenyl;

when R^1 is a cycloalkyl, a heterocycloalkyl, an aryl, or a heteroaryl, R^1 is a 4-7 membered ring;

when R^7, R^8 or R^9 is an unsubstituted alkyl, it is a C_1-C_6 unsubstituted alkyl;

when R^7, R^8 or R^9 is an unsubstituted alkenyl, it is a C_2-C_6 unsubstituted alkenyl;

R^3 is a 4-7 membered ring;

R^{11} is a 4-7 membered ring;

when R^{12} or R^{13} is an unsubstituted alkyl, it is a C_1-C_6 unsubstituted alkyl;

when R^{12} or R^{13} is an unsubstituted alkenyl, it is a C_2-C_6 unsubstituted alkyl;

when R^{14} is a cycloalkyl, a heterocycloalkyl, an aryl, or a heteroaryl, R^{14} is a 4-7 membered ring;

when R^6 is a cycloalkyl, a heterocycloalkyl, aryl, or a heteroaryl, R^6 is a 4-7 membered ring;

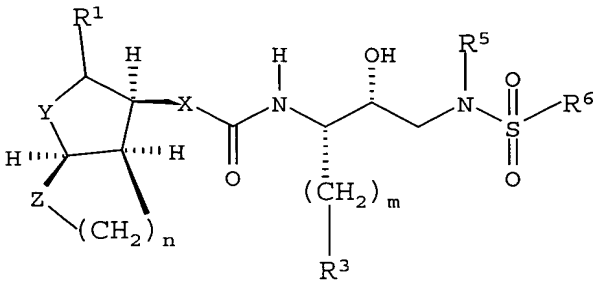
when R^6 is substituted with a substituent that is an alkyl, an alkylthio, or an alkylamino, the substituent comprises from one to six carbon atoms; and

when R^6 is substituted with a substituent that is a cycloalkyl, a heterocycloalkyl, an aryl, or a heteroaryl, the substituent is a 4-7 membered ring;

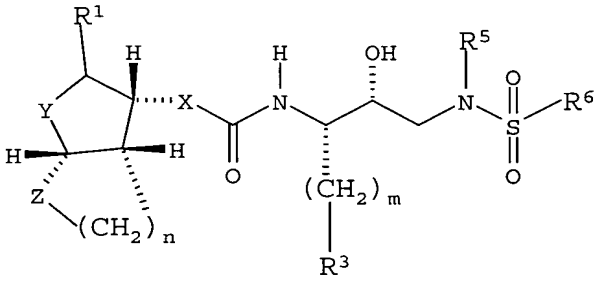
or a pharmaceutically acceptable salt, a prodrug, or an ester thereof.

50. (Amended) The method of claim 47, wherein Q is C(O), R^2 is H, and W is SO_2, or a pharmaceutically acceptable salt, a prodrug, or an ester thereof.

51. (Amended) The method of claim 47, wherein said compound is represented by the formula:



(IA) or



(IB).

54. (Amended) The method of claim 52, wherein X is oxygen.

55. (Amended) The method of claim 52, wherein R^5 is isobutyl.

56. (Amended) The method of claim 52, wherein Ar is a phenyl substituted at the para-position.

57. (Amended) The method of claim 52, wherein Ar is a phenyl substituted at the meta-position.

58. (Amended) The method of claim 52, wherein Ar is a phenyl substituted at the ortho-position.

59. (Amended) The method of claim 52, wherein Ar is selected from the group consisting of para-aminophenyl, para-toluyl, para-methoxyphenyl, meta-methoxyphenyl, and meta-hydroxymethylphenyl.

60. (Amended) The method of claim 47, wherein said HIV-infected mammal is infected with a wild-type HIV.

61. (Amended) The method of claim 47, wherein said HIV-infected mammal is infected by a mutant HIV with least one protease mutation.

62. (Amended) The method of claim 47, wherein said HIV-infected mammal is infected by a mutant HIV having at least one reverse transcriptase mutation.

Please add the following new claims:

63. (New) A method of treating a mutant retroviral infection in a mammal infected with a mutant retrovirus, which method comprises administering to said mammal a mutant retroviral-inhibiting effective amount of a compound or composition defined in claim 47.

64. (New) The method of claim 62 or 63, wherein said mutant retrovirus is a multidrug-resistant mutant retrovirus.